PATENT
Attorney Docket No.: SP00-037

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor:	Anderson et al.	
Serial No:	09/713,454	Examiner: Tu T. Nguyen
Filing Date:	11/15/2000	Group Art Unit: 2877
Title:	Methods and Apparatus For Automation of the Testing and Measurement of Optical Fiber	

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BRIEF ON APPEAL

This Brief supports the appeal to the Board of Patent Appeals and Interferences from the final rejection dated June 29, 2004, in the application listed above. Appellant filed the Notice of Appeal on September 27, 2004. Appellant now submits this Brief in triplicate, as required by 37 C.F.R. § 1.192(a).

I. REAL PARTY IN INTEREST

The real party in interest in this appeal is Corning Incorporated.

II. RELATED APPEALS AND INTERFERENCES

With respect to the related appeals or interferences that will directly affect, or be directly affected by, or have a bearing on the Board's decision in this appeal, there are no such appeals or interferences.

III. STATUS OF CLAIMS

On September 27, 2004 appellant appealed from the final rejections of claims 1-35 which were rejected in the final Office Action dated June 29, 2004. Those are the pending

claims that are the subject of this Appeal and are set forth in the attached Appendix.

IV. STATUS OF AMENDMENTS

There are no amendments that have not been entered by the Examiner. The last amendment to the claims was made in the Amendment and Response which was filed on March 16, 2004.

V. SUMMARY OF INVENTION

The present invention relates to a method and apparatus for automating the testing of optical fiber wound onto a spool. The present invention provides advantageous methods and apparatus for the automation of the testing of optical fiber. The present invention as defined by claim 1 includes an automated test station adapted to guide a first end of optical fiber which is stored on a storage spool to a first device and perform a test on the fiber; and an automated conveyor system adapted to transport the optical fiber storage spool to the test station. The method involves transporting optical fiber which is stored on a storage spool to or from various testing stations, where the fiber may be automatically guided to a testing device for testing of the optical fiber.

VI. ISSUES

The issue presented for consideration in this Appeal is:

35 U.S.C. § 103

Whether claims 1-14, 24-27, and 48-52 are patentable under 35 U.S.C. §103(a) as being nonobvious over U.S. Patent 5,871,559 (Bloom) in view of U.S. Patent No. 5,253,035 (Fukuoka et al).

VII. GROUPING OF CLAIMS

In compliance with 37 C.F.R. § 1.192(c)(5), Appellants state that all of the claims stand or fall together.

VIII. ARGUMENT

The rejection of claims 1-14, 24-27, and 48-52 as being unpatentable under 35 U.S.C. § 103(a) for obviousness in view of U.S. Patent No. 5,871,559 (Bloom) and U.S. Patent No. 5,253,035 (Fukuoka et al) is improper

Claim 1 requires that the automated test station be adapted to guide a first end of the optical fiber which is stored on a storage spool to a first testing device, and also requires an automated conveyor system adapted to transport the optical fiber storage spool to the test station.

Summary of Bloom

Bloom discloses a method for automating fabrication of fiber optic devices, including a plurality of moveable gripping devices to transport the ends of an optical fiber from a stationary gripping device to a prescribed position. Bloom notably does not disclose conveying a storage spool to a test station via an automated conveyor system.

Summary of Fukuoka

Fukuoka discloses a system for automating the testing of a length of optical fiber. In Fukuoka, holders hold each end of a jacketed optical fiber and move each end of the fiber to various testing stations. Like Bloom, and as the Examiner has previously admitted, Fukuoka does not disclose an automated conveyor system for conveying storage spools. Furthermore, Fukuoka does not disclose both an automated test station adapted to guide a first end of the optical fiber which is stored on a storage spool to a first testing device and an automated conveyor system adapted to transport the optical fiber storage spool to the test station, as Applicants claim 1 requires.

According to the Patent Office, "Fukuoka does not disclose a conveyor. However, Fukuoka's carrying unit performs the same function as the claimed conveyor (used for transporting the fiber to the different processing units) and the claimed conveyor would have been known."

Applicants respectfully disagree. Fukuoka's carrying unit does not perform the same function as the claimed conveyor. Like the conveyor assembly in Bloom, the function of each of Fukuoka's carrying units is to carry only one end of an optical fiber, to thereby deliver each respective end of that optical fiber length to different units (e.g. processing unit, connecting unit, etc.). Conversely, the function of Applicants' conveyor is to carry a spool of fiber. As

mentioned above, the prior art itself must suggest the desirability and, therefore, obviousness of a modification of a reference or the combination of references to achieve a claimed invention. Hodosh v. Block Drug, 786 F.2d at 1143 n.5, 229 USPQ at 187 n.5; In re Gordon, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). The combination of Fukuoka and Bloom cannot possibly result in Applicants' claimed invention, as neither of these references even mention or suggest moving a storage spool via a conveyor. Applicants' conveyor is used for transporting the spool from different inspection sites located at different locations throughout a manufacturing plant. Conversely, if the combination of Fukuoka and Bloom were employed in a manufacturing plant, one must deploy a considerable length of fiber to get to different test stations, as the storage spool would remain stationary. Consequently, even if, assuming arguendo, the teachings of Fukuoka and Bloom could be combined, the Applicants submit that such a combination would not result in Applicants' claimed invention.

The Patent Office also states that "it would have been obvious to combine Bloom with Fukuoka's carrying unit to automatically transport the spool to the testing unit." Again, applicants disagree that such a combination would result in applicants' claimed invention. As described above, Fukuoka's carrying unit is only designed to carry the holders 12 which hold the end of the jacketed optical fiber to each of the testing units. There is no mention or suggestion in Fukuoka of any carrying unit which is designed to carry an optical fiber spool. The prior art itself must suggest the desirability and obviousness of a modification of a reference or the combination of references to achieve the claimed invention. The Patent Office does not indicate where the motivation comes from to modify the fiber transporting carrying unit in Fukuoka to be a optical fiber spool carrying unit. Furthermore, it would seem that making such a modification to the teachings of Fukuoka would destroy the intended effect of Fukuoka and indeed go contrary to the express teachings of Fukuoka and Bloom, both of which maintain the storage spool in a stationary location, and instead move the ends of the optical fiber to various locations without moving the spool. An applicant may rebut a prima facie case of obviousness by showing that the prior art teaches away from the claimed invention in any material respect. In re Geisler, 116 F.3d at 1469, 43 USPQ2d at 1365 (quoting In re Malagari, 499 F.2d at 1303, 182 USPQ at 553)

For all of the above reasons, it is submitted that claim 1 is in condition for allowance.

With respect to claim 6, there is clearly no mention or suggestion in Fukuoka of a system wherein a spool is first conveyed to a test station and then the test station is adapted to

acquire a sample length of the optical fiber and perform a test on the optical fiber. If the Patent Office is modifying the teachings of Bloom and Fukuoka so that the conveyor units in these patents are used to convey a fiber spool, then the same conveyor units would no longer be suitable to convey a length of optical fiber to the test unit as required by claim 6.

The remarks made above with respect to claim 1 similarly apply to claim 7. In particular, none of the references, either alone or in combination, disclose an automated conveyor system adapted to transport the spool from the first station to the second station.

With respect to claim 9, again, if the Fukuoka and Bloom carrier units are modified to convey a spool of optical fiber, then there is no other conveyor unit present to pull the first end and second end of the optical fiber, and so forth as required by claim 9.

With respect to claim 12, there is no mention or suggestion in any of the references cited by the Patent Office of a pallet for carrying a spool of optical fiber, nor is there any mention or suggestion of a radio frequency tag attached to such a pallet.

Claim 13 requires not only a conveyor to transport a spool from various test stations to other test stations, but also a first station adapted to automatically strip and cut the fiber stored on the spool, a second station adapted to guide a first and second end of the fiber to a testing device and perform a test thereon, and a third station adapted to guide a length of fiber to a second testing device and perform a second test on said fiber. There is no mention or suggestion in any of the references cited, either alone or in combination, of such a system utilizing one conveyor system to transport an optical fiber storage spool between various automated testing stations.

With respect to claim 14, none of the references, alone or in combination, disclose first and second testing stations which are adapted to guide a sample of length of fiber from an optical fiber storage spool and perform a test, along with an automated conveyor system which is adapted to transport the spool from the first test station to the second test station. In fact, as described above, the prior art cited by the Patent Office actually teaches away from such a system , as both of the prior art references relied on by the Patent Office maintain the fiber storage spool in a stationary position, and simply move the ends of the optical fiber to various stations.

With respect to claim 24, none of the references, alone or in combination, disclose transporting an optical fiber storage spool which stores a length of optical fiber to a first station by an automated transportation system, acquiring a sampling of the optical fiber from

the spool by a testing apparatus and testing the length of the optical fiber.

With respect to claim 48, there is no mention or suggestion in any of the references cited, alone or in combination, of placing a spool of optical fiber onto a pallet, nor is there any suggestion or placing a spool of optical fiber onto a pallet such that a first end and a second end of the fiber extend outward in a manner so as to provide easy access to both the first and second ends. There is also no mention or suggestion of transporting such a pallet to a test station where a first and second end of optical fiber is pulled from the spool and the fiber is tested.

With respect to claim 52, there is no mention or suggestion in any of the references cited, alone or in combination, of placing a spool of optical fiber onto a pallet such that a first end of fiber extends out in a manner to provide easy access and the pallet is transferred to a test station and the first end is pulled to a test device such that a first length is unwound from the spool. In fact, in Bloom, the spool remains stationary while the ends of the optical fiber are moved to various stations, likewise, in Fukuoka there is no mention or suggestion of moving spools to various test stations and then pulling an end of an optical fiber from the optical fiber spool. Consequently, the teachings in Bloom and Fukuoka seem to actually teach against this proposed modification.

For at least the reasons given above, Appellants assert that the Examiner has failed to make a *prima facie* case of obviousness, and that the Board should reverse the §103 rejection and find that claims 1 -31 are allowable over the prior art of record.

IX. CONCLUSION

In conclusion, Appellants request a reversal of each of the grounds of rejection maintained by the Examiner and prompt allowance of the pending claims 1-14, 24-27, and 48-52.

If there are any other fees due in connection with the filing of this Brief on Appeal, please charge the fees to our Deposit Account No. 03-3325. If a fee is required for an

extension of time under 37 C.F.R. § 1.136 not accounted for above, such an extension is requested and the fee should also be charged to our Deposit Account.

Respectfully submitted,

Dated: November 24, 2004 By: 

Robert L. Carlson
Registration No. 35,473
607-974-3502
Corning Incorporated
Patent Department
SP-TI-03-01
Corning, NY 14831

CERTIFICATE OF MAILING (37 CFR 1.8a)
I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope Addressed to: Mail Stop Appeal Brief, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on November 24, 2004.

Robert L. Carlson

APPENDIX TO BRIEF ON APPEAL

The claims on appeal are as follows:

1. (previously amended) A system for automating the testing of optical fiber comprising:

at least one automated test station adapted to guide a first end of the optical fiber which is stored on a storage spool to a first testing device and perform a test on the optical fiber; and

an automated conveyor system adapted to transport the optical fiber storage spool to the test station.

2. (original) The system of claim 1 wherein said at least one test station is further adapted to:

strip a coating from the first end of the optical fiber.

3. (original) The system of claim 2 wherein said at least one test station is further adapted to:

strip the coating from a second end of the optical fiber; and

guide the second end of the optical fiber to the first testing device.

4. (original) The system of claim 2 wherein said at least one test station is further adapted to:

cleave the first end of the optical fiber.

5. (original) The system of claim 4 wherein said at least one test station is further adapted to:

clean the first end of the optical fiber.

6. (original) The system of claim 4 wherein said at least one test station is further adapted to:

acquire a sample length of the optical fiber; and

perform the test on the sample length of the optical fiber.

7. (original) A system for automating the testing of optical fiber comprising:

a spool upon which the optical fiber is wound;

a first station adapted to automatically:

strip a coating from a first end and a second end of the optical fiber;

cut the first end and the second end of the optical fiber;

a second station which includes a first testing device, one of said first or second stations adapted to:

guide the first end and the second end of the optical fiber to the first testing device;

perform a first test on the optical fiber; and

an automated conveyor system adapted to transport the spool from the first station to the second station.

8. (original) The system of claim 7 wherein:

the first station is further adapted to clean the first end and the second end of the optical fiber; and

the second station is further adapted to cleave the first end and the second end of the optical fiber.

9. (original) The system of claim 7 wherein the second station is further adapted to:

pull the first end and the second end of the optical fiber;

cut a first length of optical fiber from the first end;

cut a second length of optical fiber from the second end; and

discard the first length and the second length.

10. (original) The system of claim 7 wherein:

the first test comprises determining a measurement of the optical attenuation of the optical fiber using optical time domain reflectometry.

11. (original) The system of claim 7 wherein:

the first test comprises determining a measurement of the optical dispersion of the optical fiber.

12. (original) The system of claim 7 further comprising:

a pallet for carrying the spool;

a radio frequency (RF) tag attached to the pallet adapted for containing data, the data including spool identification data, test processing instructions, and test results; and

a plurality of RF tag devices located adjacent to the automated conveyor system adapted to read data from and write data to the RF tag.

13. (original) The system of claim 7 further comprising:

a third station adapted to:

acquire a test sample length of the optical fiber;

guide the test sample length of the optical fiber to a second testing device; and

perform a second test on the test sample length of optical the optical fiber;

wherein the automated conveyor system is further adapted to transport the spool from the second test station to the third test station.

14. (original) A system for automating the testing optical fiber, the optical fiber including a first end and a second end, the system comprising:

a spool upon which the optical fiber is wound;

a first test station, the first test station adapted to:

manipulate the first end and the second end of the optical fiber;

guide the first end of the optical fiber to a first testing device;

perform a first test on the optical fiber;

a second test station, the second test station adapted to:

acquire a test sample length of the optical fiber;

guide the test sample length to a second testing device;

perform a second test on the test sample length of optical fiber; and

an automated conveyor system adapted to transport the spool from the first test station to the second test station.

15-23 (canceled)

24. (previously amended) A method for automating the testing of optical fiber comprising the steps of:

transporting an optical fiber storage spool which stores a length of optical fiber to a first test station by an automated transportation system;

acquiring a sample length of the optical fiber from the spool by a testing apparatus;

guiding the sample length of the optical fiber to an optical fiber tester by the testing apparatus; and

testing the sample length of the optical fiber by the optical fiber tester.

25. (original) The method of claim 24, after the step of acquiring a sample length, further comprising the steps of:

stripping the coating from at least one end of the sample length of optical fiber by the testing apparatus;

cleaving the at least one end of the sample length of the optical fiber by the testing apparatus; and

cleaning the at least one end of the sample length of the optical fiber by the testing apparatus.

26. (original) The method of claim 24, after the step of testing the sample length, further comprising the step of:

discarding the sample length of the optical fiber.

27. (original) The method of claim 24, further comprising, after said testing step, transporting said fiber spool to a second test station.

28. (withdrawn) A pallet adapted for carrying a spool of optical fiber comprising:

a mounting device adapted for holding a spool of optical fiber; and

a first structure adapted for holding a first end of the optical fiber such that the first end of the optical fiber extends outward in a such a manner as to provide easy access to the first end.

29. (withdrawn) The pallet of claim 28 further comprising:

a second structure adapted for holding a second end of the optical fiber such that the second end of the optical fiber extends outward in a such a manner as to provide easy access to the second end.

30. (withdrawn) The pallet of claim 29 wherein:

the first structure is further adapted to allow optical fiber to be unwound from the first end without disturbing the second end of the optical fiber; and

the second structure is further adapted to allow optical fiber to be unwound from the second end without disturbing the first end.

31. (withdrawn) The pallet of claim 30 wherein:

the first structure and the second structure are further adapted to allow optical fiber to be unwound from both the first end and the second end simultaneously.

32. (withdrawn) The pallet of claim 28 wherein the pallet is further adapted for carrying the spool of optical fiber to an optical fiber test station.

33. (withdrawn) The pallet of claim 28 wherein the pallet is further adapted for use

with an automated optical fiber test system.

34. (withdrawn) The pallet of claim 1 wherein the pallet is further adapted for use with a conveyor system to carry the spool of optical fiber from a first automated test station to second automated test station.

35. (withdrawn) The pallet of claim 28 further comprising:

a data storage device attached to the pallet adapted to be read from and written to.

36. (withdrawn) The pallet of claim 35 wherein the data storage device identifies the spool of optical fiber and provides a database of at least one test result.

37. (withdrawn) A pallet adapted for carrying a spool of optical fiber comprising:

a base;

a spool holding apparatus mounted on the base adapted for holding the spool of optical fiber;

a first feed finger assembly attached to the base adapted for holding a first end of the optical fiber;

a second feed finger assembly attached to the base adapted for holding the second end of the optical fiber;

wherein the pallet is adapted to allow optical fiber to be unwound from the first end without disturbing a second end of the optical fiber, and to allow optical fiber to be unwound from the second end without disturbing the first end.

38. (withdrawn) A pallet adapted for carrying a spool of optical fiber comprising:

a base;

a spool holding apparatus mounted on the base adapted for holding the spool of optical fiber;

a first vertical bracket mounted to the base;

a second vertical bracket mounted to the base;

a first feed finger assembly rotationally mounted to the first vertical bracket adapted

for holding a first end of the optical fiber and allowing optical fiber to be unwound from the first end without disturbing a second end of the optical fiber; and

a second feed finger assembly mounted to the second vertical bracket adapted for holding the second end of the optical fiber and allowing optical fiber to be unwound from the second end without disturbing the first end.

39. (withdrawn) The pallet of claim 38 wherein the spool carrying apparatus comprises a roller assembly including a pair of rollers.

40. (withdrawn) The pallet of claim 38 further comprising:

a pickoff assembly rotationally mounted on the first vertical bracket;

a first lead meter including an eyelet extending from the pickoff assembly adapted to contain the optical fiber;

a clutch assembly mounted on the pickoff assembly adapted to engage the spool such that when optical fiber is unwound from the second end, the pickoff assembly, the first lead meter, and the clutch assembly rotate in synchronization with the spool, and when optical fiber is unwound from the second end, the spool remains substantially stationary and the pickoff assembly, the first lead meter, and the clutch assembly rotate.

41. (withdrawn) The pallet of claim 40 further comprising:

an upright guide roller mounted on the base adapted to guide the optical fiber;

a secondary roller attached to the second vertical bracket adapted to guide the optical fiber; and

a second lead meter including a second eyelet extending from the second vertical bracket adapted to contain the optical fiber.

42. (withdrawn) A spool and pallet system comprising:

a spool of optical fiber having a first end and a second end; and

a pallet holding the spool of optical fiber such that the first end of the optical fiber extends outward in such a manner as to provide easy access to the first end, and such that the second end of the optical fiber extends outward in such a manner as to provide easy access to the second end.

43. (withdrawn) The system of claim 42 wherein:

the pallet is adapted to allow optical fiber to be unwound from the first end without disturbing the second end of the optical fiber and to allow optical fiber to be unwound from the second end without disturbing the first end.

44. (withdrawn) The system of claim 43 wherein the pallet is further adapted to allow optical fiber to be unwound from both the first end and the second end simultaneously.

45. (withdrawn) The system of claim 42 further comprising:

a data storage device attached to the pallet adapted to be read from and written to.

46. (withdrawn) The system of claim 42 wherein the spool further comprises:

a primary barrel;

a lead meter barrel; and

an outboard flange separating said primary barrel and said lead meter barrel, said outboard flange including a slot adapted to provide a path for the optical fiber between said primary barrel and said lead meter barrel.

47. (withdrawn) A method of loading a spool of optical fiber onto a pallet adapted for carrying the spool comprising the steps of:

placing the spool of optical fiber onto the pallet;

threading a first end of the optical fiber through a first structure adapted for holding the first end such that the first ends extends outward in such a manner as to provide easy access to the first end; and

threading a second end of the optical fiber through a second structure adapted for holding the second end such that the second end extends outward in such a manner as to provide easy access to the second end.

48. (original) A method of testing a spool of optical fiber:

placing the spool of optical fiber onto a pallet such that a first end and a second end of the optical fiber extend outward in such a manner as to provide easy access to both the first end and the second end;

transporting the pallet to a test station;

pulling the first end of the optical fiber to a test device such that a first length of optical fiber is unwound from the spool;

pulling the second end of the optical fiber to the test device such that a second length of optical fiber is unwound from the spool; and

testing the optical fiber wound onto the spool.

49. (original) The method of claim 48 wherein:

the step of pulling the first end of the optical fiber does not disturb the second end of the optical fiber.

50. (original) The method of claim 48 wherein:

the step of pulling the second end of the optical fiber does not disturb the first end of the optical fiber.

51. (original) The method of claim 48 further comprising the steps of:

cutting a portion of the first length of optical fiber pulled from the spool; and

cutting a portion of the second length of optical fiber pulled from the spool.

52. (original) A method of testing a spool of optical fiber:

placing the spool of optical fiber onto a pallet such that a first end of the optical fiber extends outward in such a manner as to provide easy access to the first end;

transporting the pallet to a test station;

pulling the first end of the optical fiber to a test device such that a first length of optical fiber is unwound from the spool;

cutting a sample length of the first end of the optical fiber;

guiding the sample length of optical fiber to a test device; and

performing a test on the sample length of optical fiber.

PTO/SB/21 (09-04)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission

Application Number	09/713454
Filing Date	11/15/2000
First Named Inventor	Anderson, Erling R. et al
Art Unit	2877
Examiner Name	Nguyen, Tu T.
Attorney Docket Number	SP00-037

ENCLOSURES *(Check all that apply)*

- ☐ Fee Transmittal Form
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- ☐ Amendment/Reply
  - ☐ After Final
  - ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request
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- ☐ Certified Copy of Priority Document(s)
- ☐ Reply to Missing Parts/ Incomplete Application
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Remarks

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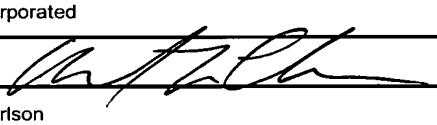
Signature			
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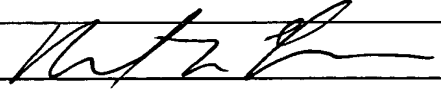
Signature			
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